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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Archie W. Garner

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EXAMINER

GILLESPIE, BENJAMIN

ART UNIT

PAPER NUMBER

1796

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/521,225	<b>Applicant(s)</b> GARNER ET AL.	
	<b>Examiner</b> BENJAMIN J. GILLESPIE	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

1. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The language “a partially branched hydroxyl-terminated oligoester” render the claims indefinite because “partially” is a relative term.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over McBain et al ('053) in view of Bristowe et al ('837). McBain et al teach a gel coat composition comprising a urethane gel coat resin having terminal acrylate groups. The urethane resin is the reaction product of hydroxyl-terminated oligoester, polyisocyanate and hydroxyalkyl (meth)acrylate (Abstract; col 7 lines 1, 26-30; and col 10 lines 24-26). In particular, the oligoester is the reaction product of hexanediol, neopentyl glycol and adipic acid, and has a molecular weight between 1,500 and 2,500 (Col 2 lines 37, 44-59). The polyisocyanate preferably consists of isophorone diisocyanate, and the hydroxyalkyl (meth)acrylate consists of hydroxyethyl acrylate (Col 3 lines 4, 7, and 9). The oligoester, diisocyanate, and hydroxyethyl acrylate is further

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disclosed to exist in molar amounts consisting of 1:2:2 respectively (Col 2 lines 65-67; col 3 lines 1-7). The structure of claim 2 would inherently be possessed by the polyurethane disclosed by McBain et al based on the shared stoichiometry and the reactive nature of OH and NCO functional groups.

3. Patentees go on to disclose the gel coat composition contains, in addition to the resin, other ingredients comprising free radical initiators, which are utilized in polymerization, and pigments. The gel resin is co-present with these components in an amount of 33% by weight of the total composition (Col 4 lines 56, 59-61; col 5 lines 12-16; col 7 lines 60-66; col 8 lines 1-18). Finally, McBain et al teach the gel coating composition to prepare exterior automotive body panels, which is then cured (Col 7 lines 16-20). However, McBain et al fail to teach a method of production wherein the oligoester is combined with the hydroxyalkyl (meth)acrylate before the addition of diisocyanate.

4. Bristowe et al teach an acrylate-terminated urethane coating composition comprising oligoester, isophorone diisocyanate, and hydroxyethyl acrylate (Abstract; col 2 lines 1-9, 35-36; col 4 lines 42; and col 5 line 35). Bristowe et al go on to teach a preferred method of production wherein the oligoester is blended with the hydroxyethyl acrylate, forming an intermediate and then reacted with diisocyanate (Col 5 lines 67-68; col 6 lines 1-7). Bristowe et al explain that the disclosed method allows for better control of the exothermic reaction and minimizes the formation of by-products without substantially affecting the nature of the resulting vinyl ester urethane (Col 6 lines 17-22). Therefore it would have been obvious to one of ordinary skill within the art at the time of invention to utilize the preferred method of Bristowe et al in McBain et al based on the motivation that both teach vinyl functional urethane esters having analogous

backbone architecture, and the method of Bristowe et al allows for better control of reaction conditions and while producing an improved product.

5. Finally regarding applicants' claimed isocyanate content, although McBain et al do not discuss said content, Bristowe et al teach in examples 4-8 that urethane acrylates based on corresponding stoichiometries result in compounds having "no residual isocyanate." Therefore, based on the logic set forth above to utilize the method of Bristowe et al in McBain et al, one of ordinary skill would reasonable expect that the resulting urethane acrylate would have "no residual isocyanate," which is taken to satisfy applicants' claimed content.

6. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomotsugu et al ('613) in view of Bristowe et al ('837). Tomotsugu et al teach a urethane acrylate resin comprising the reaction product of hydroxyl-functional polyester, polyisocyanate, and 2-hydroxyethyl (meth)acrylate. (Abstract; col 2 lines 64-68; col 3 lines 1-13). In particular, patentees explain that the polyester polyol is the reaction product of aliphatic cyclohexane-dicarboxylic acid, and a mixture of diol and triol, specifically 60-100% diol and 0-40% triol, wherein said diol consists of compounds such as butanediol, neopentyl glycol, and pentanediol, and said triol consists of glycerol and trimethylolpropane (Col 2 lines 30, 39-46, 54-53).

7. The resulting composition has no residual free isocyanate, and further contains additional components such as pigments and initiators (Col 4 lines 46-63; col5 lines 56-58). Finally, Tomotsugu et al teach that the resulting urethane acrylate is useful in coatings, however patentees fail to disclose a method of production wherein the polyester is combined with the hydroxyethyl (meth)acrylate before the addition of diisocyanate, or specify the resin as a "gel coat" (Claims 6 and 7).

8. Aforementioned, Bristowe et al teach an acrylate-terminated urethane coating composition comprising oligoester, isophorone diisocyanate, and hydroxyethyl acrylate (Abstract; col 2 lines 1-9, 35-36; col 4 lines 42; and col 5 line 35). Bristowe et al go on to teach a preferred method of production wherein the oligoester is blended with the hydroxyethyl acrylate, forming an intermediate and then reacted with diisocyanate (Col 5 lines 67-68; col 6 lines 1-7). Bristowe et al explain that the disclosed method allows for better control of the exothermic reaction and minimizes the formation of by-products without substantially affecting the nature of the resulting vinyl ester urethane (Col 6 lines 17-22).

9. Therefore it would have been obvious to one of ordinary skill within the art at the time of invention to utilize the preferred method of Bristowe et al in Tomotsugu et al based on the motivation that both teach vinyl functional urethane esters having analogous backbone architecture, and the method of Bristowe et al allows for better control of reaction conditions and while producing an improved product. Finally, regarding applicants' claimed "gel coat" limitation, although Tomotsugu et al fail to refer to the urethane acrylate composition as a "gel coat," based on analogous reactants, stoichiometries, and method of production, one would reasonably expect said urethane acrylate to exhibit the same properties as claimed by applicant.

#### ***Response to Arguments***

10. Applicant's arguments, filed 5/13/2008, with respect to the rejection of claims 1-3 and 5-25 have been fully considered, but are not persuasive.

11. In particular, applicants argue the language "a partially branched... oligoester," does not render the claimed invention indefinite under 35 U.S.C. 112 2<sup>nd</sup> paragraph because the claim also contains the language "wherein the oligoester comprises up to 5 mole% of the one or more

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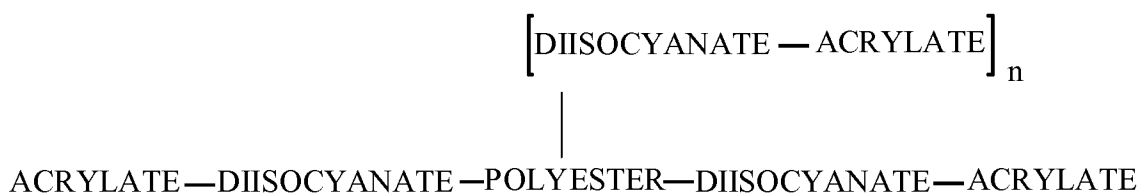
saturated triols or polyols,” which allegedly defines what is intended by “partially branched,” the examiner disagrees. The language “up to 5 mole% of the one or more saturated triols or polyols” fails to further define “partially branched,” because component (ii) is only limited to a “triol or polyol,” however polyol does not exclude di-functional alcohols, as exemplified by U.S. patent 4,425,468 on column 5 lines 32+, and as a result component (ii) may consist of diols which according to applicants would not produce a branched reaction product. Furthermore, the range “up to 5 mole%,” encompasses a lower range limit of 0 mole%, and therefore the “partially branched” oligoester does not require component (ii) at all. Based on this logic, the “partially branched” polyurethane may be based solely on linear diols which only further reinforce the issues of indefiniteness since it is unclear as to how a “branched” molecular is based solely on linear reactants.

12. Applicants also argue that claims 1-3 and 5-25 are patentable over McBain et al in view of Bristowe et al, because McBain et al only teach linear polyurethanes, i.e. based on di-functional alcohols and therefore fail to satisfy the claimed limitation “partially branched.” Furthermore, this position is reinforced since McBain et al also fail to teach the composition “compris[ing] up to 5 mol% of one or more saturated triols or polyols,” the examiner disagrees. As previously discussed in paragraph 11, to the extent applicants have limited their invention, McBain et al disclose polyurethanes that satisfy applicants’ claimed polyurethane. In particular, the examiner notes that the urethane acrylate gel is required to be “partially branched,” however this limitation is only defined by the language “the oligoester comprises up to 5 mole% of the one or more saturated triols or polyols.”

13. With this understanding, the examiner would like to point out that since McBain et al teach di-functional alcohols, patentees disclose a “partially branched,” polyurethane to the extent that is claimed since only di-functional alcohols are required. Furthermore, if applicants’ maintain that “polyol” must have at least three hydroxyl groups, the examiner would like to point out that component (ii) is currently an optional component; i.e. claim 1 is only limited to 0-5 mole% of triol or polyol. As a result, the prior art satisfies the claimed “partially branched” limitation since it discloses the same urethane acrylate claimed by applicants.

14. Finally, applicants argue that claims 1-3 and 5-25 are patentable over Tomotsugu et al in view of Bristowe et al because the (1) final product of Tomotsugu et al differs from the claimed invention, (2) one would have not been motivated to combine the teachings of the prior art since Tomotsugu et al are drawn to aliphatic diisocyanates, and Bristowe et al are drawn to aromatic diisocyanates, and (3) Tomotsugu et al do not prefer adipic acid based polyester polyol.

15. In response to issue (1), it is noted that Tomotsugu et al results in urethane acrylates having the structure:



wherein n is either 0, 1, or greater, i.e. n can not be 0-1, and applicants invention has n values that are n>0; however this position is not commensurate in scope with the present claims as no “n” value has been set forth that require certain amounts of di and tri or higher functional acrylate urethanes in the final composition.



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16. Regarding issue (2), while it is noted that Bristowe et al teach aromatic diisocyanates, column 4 lines 40-44 also disclose aliphatic diisocyanates, and important to note, nowhere do patentees teach the problems caused by the exothermic reaction are based solely on aromatic diisocyanates. Therefore, applicants' position appears to be an unsubstantiated opinion which has not been supported by any type of factual data, and is therefore not persuasive (Col 4 lines 40-44).

17. Finally regarding issue (3), it is noted that Tomotsugu et al prefer alicyclic dicarboxylic acids, however example I utilizes adipic acid. Hence it would have been obvious to also include adipic acid based polyesters since it is disclosed by the prior art as being useful in producing urethane acrylates, and it is prima facie obvious to add a known ingredient for its known function. *In re Linder* 173 USPQ 356; *In re Dial et al* 140 USPQ 244.

### ***Conclusion***

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

19. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin J. Gillespie whose telephone number is 571-272-2472. The examiner can normally be reached on 8am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rabon Sergent/  
Primary Examiner, Art Unit 1796

B. Gillespie